

PROBABILITY REVIEW

1) List 3 rules for using combinations

2) Permutations Combinations
 # of patterns # of groups

Maybelle prob not getting A = $\frac{8}{11}$ prob(A) = $\frac{3}{11} = \frac{15}{55}$
 Martin odds of getting A = $\frac{2}{3}$ ^{suc} fail prob = $\frac{2}{5} = \frac{22}{55}$

$$\begin{aligned} {}_7P_2 &= \frac{7!}{5!} \\ &= \frac{7 \cdot 6 \cdot \cancel{5 \cdot 4 \cdot 3 \cdot 2 \cdot 1}}{\cancel{5 \cdot 4 \cdot 3 \cdot 2 \cdot 1}} \\ &= 42 \end{aligned}$$

$$\begin{aligned} {}_7C_2 &= \frac{7!}{5!2!} \\ &= \frac{7 \cdot 6 \cdot \cancel{5 \cdot 4 \cdot 3 \cdot 2 \cdot 1}}{\cancel{5 \cdot 4 \cdot 3 \cdot 2 \cdot 1} \cdot 2 \cdot 1} = \frac{42}{2} = 21 \end{aligned}$$

Permutations

1) All objects = $n!$
 $8! = 40,320$

2) Use portion = $n P_r$
 8 - make patterns of 5.

$$8 P_5$$

Combinations

$$n C_r$$

6) (pitcher + 8 other

$$3 C_1 \cdot 12 C_8$$

3) Objects look like = $\frac{\text{total!}}{a! \cdot k! \cdot a'k'}$
 BANANA = $\frac{6!}{2! \cdot 3!} = 60$

4) specific patterns^N or repeated objects } Draw blanks

$$\underline{26} \cdot \underline{25} \cdot \underline{10} \cdot \underline{10} \cdot \underline{24} \cdot \underline{23} \cdot \underline{10} \cdot \underline{10}$$

L L D D L L D D

Repeat digits

Cannot repeat letters

PROBABILITY

Combinations

- 1) No Repl
- 2) No Order
- 3) Dependent

Indiv. probabilities

$$\frac{3}{8} \cdot \frac{4}{7} \cdot \frac{2}{6}$$

- 1) Order
- 2) Replacement
- 3) Indep

Win homework coupon
Draw 3 times. (can win more than once.)
Prob (3 girls win)

$$\frac{4}{9} \cdot \frac{4}{9} \cdot \frac{4}{9}$$

Binomial

- 1) 2 possible outcomes
- 2) Indep.

How to spot:

- * Doing same action multiple times
- * May be given the prob of one of the events in the problem.

- 3 Kit Kats
- 4 Snickers
- 5 Reese's
- 6 SKittles

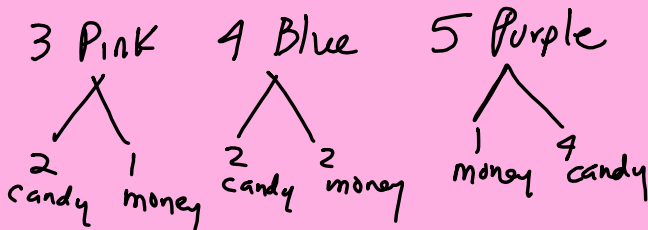
Pick 4 eggs.

Prob (at least 3 Reese's)

3 Reese's + 1 other or 4 Reese's

$$\frac{{}^5C_3 \cdot {}^{13}C_1 + {}^5C_4}{}$$

$${}^{18}C_4$$



Prob (candy, money, money)
in order

$$\frac{8}{12} \cdot \frac{4}{11} \cdot \frac{3}{10}$$

Prob (3 purple or 3 candy)

$$\frac{{}^5C_3 + {}^8C_3 - {}^4C_3}{}$$

← Subtract duplicates

$${}^{12}C_3$$

$$(2x - 5y)^4 =$$
$$\underset{\uparrow C_0}{1}(2x)^4(5y)^0 - \underset{\uparrow C_1}{4}(2x)^3(5y)^1 + \underset{\uparrow C_2}{6}(2x)^2(5y)^2 - \underset{\uparrow C_3}{4}(2x)^1(5y)^3 + \underset{\uparrow C_4}{1}(5y)^4$$

